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1 SYSTEM AND METHOD FOR STANDARDIZING COMPONENT CHARACTERISTIC
2 DATA SUBMITTED BY A SELLER FOR USE BY A BUYER

3 **BACKGROUND OF THE INVENTION**

4 1. Field of the Invention

5 The present invention relates generally to information exchange systems and, more
6 particularly, to a quality exchange system providing the capability to receive characteristic data,
7 including quality information, standardize the characteristic data, and present the standardized
8 characteristic data.

9 2. Description of the Prior Art and Related Information

10 Most commercial products are manufactured in volume by manufacturers who procure a
11 variety of components from a variety of suppliers to assemble and sell an end product.
12 Inevitably, a certain number of these end products will be returned to the manufacturer because
13 they have reportedly failed in some way when a user attempted to use the product.

14 Historically, a significant percentage of these returned products are found to include no
15 defects when subsequently evaluated by the manufacturer. Although no defects were found,
16 many of these returned products may be scrapped, or re-tested and re-shipped, usually at a
17 discount from the original selling price of the product. A manufacturer thus is subjected to
18 losses from the testing of products that have no apparent defect and from the loss of revenue
19 resulting from the scraping or discounting. Alternatively, a number of returned products actually
20 might be defective, having failed due to one or more defective components that tend to fail
21 according to a pattern of characteristic data. The pattern may not be obvious.

22 The return rate of a particular product, in some cases, may be influenced by the use of a
23 particular component, either in isolation or in combination with other components purchased
24 from one or more of the aforementioned variety of suppliers. To discover and characterize this

1 influence, data warehousing and data mining techniques can be deployed if characteristic data for
2 the components can be accessed.

3 Recently, Internet-based exchanges have been deployed to facilitate the purchase of
4 components and products in a more efficient manner. In general, however, the purchase of
5 components through these Internet-based exchanges does not provide the necessary information
6 to support investigations directed toward discovering component characteristic data influences
7 on product returns. A need therefore exists for a system and method for compiling and accessing
8 component characteristic data in an Internet-based exchange environment such that meaningful
9 analysis can be conducted to discover patterns that may influence product returns. Further,
10 since different manufacturers may employ different methods and bases for measuring and
11 reporting their component characteristic data, a meaningful analysis would be greatly facilitated
12 by uniformly presenting the each manufacturer's component characteristic data in accordance
13 with a preselected standard.

14 **SUMMARY OF THE INVENTION**

15 The present invention is directed to a quality exchange system providing the capability to
16 communicate characteristic data, including quality information, to manufacturers and/or
17 consumers. Through the use of the present invention, manufacturers and/or consumers may be
18 able to receive characteristic data that has been standardized in accordance with a data standard.
19 The present invention thereby provides the advantages of providing manufacturers with a
20 common forum for sharing characteristic data, offering consumers a convenient mechanism for
21 providing manufacturers with valuable feedback about their components, and facilitating
22 meaningful analyses of each manufacturer's component characteristic data.

23 A quality exchange system in accordance with the present invention may comprise a
24 receiving system, a converter, and an extractor. The receiving system is adapted for receiving
25 characteristic data, as well as characteristic data requirements, for a plurality of components from
26 at least one buyer processor and/or at least one seller processor. The characteristic data

1 comprises any information, including quality information, that relates to decreasing the return
2 rate for the plurality of components and/or to increasing the quality and/or reliability of the
3 plurality of components. Similarly, the characteristic data requirements include a request by one
4 or more of the seller processors and/or the buyer processors for standardized characteristic data
5 from the quality exchange system.

6 The converter is coupled with, and capable of data communications with, the receiving
7 system and is capable of establishing a data standard. Since the characteristic data may be
8 measured and reported based upon a plurality of different methods and bases, the data standard
9 provides a uniform standard into which the characteristic data can be converted to facilitate
10 meaningful characteristic data analyses. For each of the plurality of components, the converter
11 generates the data standard by examining the characteristic data as reported by the seller
12 processors along with any comments included in the characteristic data from the buyer
13 processors. If multiple data standards would facilitate meaningful alternate analyses of the
14 characteristic data, the converter may be capable of generating a plurality of data standards for
15 each of the plurality of components. One of the plurality of data standards may be designated as
16 a default data standard.

17 After the data standard has been established, the converter is capable of converting
18 subsequent characteristic data from the seller processors and/or the buyer processors into
19 standardized characteristic data in accordance with the data standard. Upon receiving
20 characteristic data from the receiving system, the converter first verifies that the characteristic
21 data substantially complies with a set of data format requirements. If the characteristic data is
22 acceptable, the converter then converts the characteristic data into the standardized characteristic
23 data, storing the standardized characteristic data in a database system. To encourage the seller
24 processors to provide characteristic data that substantially complies with the set of data format
25 requirements, the quality exchange system may condition the participation of each seller
26 processor upon providing acceptable characteristic data.

1 The converter also is capable of receiving the characteristic data requirements from the
2 seller processors and/or the buyer processors via the receiving system. The converter, upon
3 receipting the characteristic data requirements for one or more of the plurality of components,
4 retrieves any standardized characteristic data relevant to the characteristic data requirements
5 from the database system. If the characteristic data requirements include one or more
6 preselected data standards for presenting the standardized characteristic data, the converter may
7 convert the relevant characteristic data to substantially comply with the preselected data
8 standards. After the standardized characteristic data has been retrieved and, if necessary,
9 converted, the converter communicates the relevant standardized characteristic data to the
10 extractor. The extractor is coupled with, and capable of data communications with, the receiving
11 system and/or the converter and is capable of presenting the standardized characteristic data to
12 the seller processors and/or the buyer processors.

13 It will be appreciated that a quality exchange system in accordance with the present
14 invention may permit manufacturers and/or customers to exchange characteristic data, including
15 quality information, for a plurality of components, facilitating meaningful analyses of each
16 manufacturer's characteristic data.

17 **BRIEF DESCRIPTION OF THE DRAWINGS**

18 Fig. 1 is a block diagram illustrating a system for information exchange in a component
19 exchange system.
20 Fig. 2 is an exemplary graph illustrating a linear regression for unacceptable solder joints.
21 Figs. 3A-C and 4A-B each are flow diagrams illustrating the steps in a method performed in the
22 system of Fig. 1.

23 **DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS**

24 Since quality information for substantially similar components may be difficult to
25 evaluate due to a lack of availability or inconsistent measurement standards, a quality exchange

1 system in a component exchange system may prove to be a convenient and meaningful approach
2 for presenting quality information. By making quality information more uniform and more
3 readily available, knowledge may expand concerning interactions among various components,
4 resulting in an increase in quality and a decrease in a number of returns. This result may be
5 achieved, according to one embodiment of the present invention, by employing a quality
6 exchange system 51 in a component exchange system 50 as shown in Fig. 1. The quality
7 exchange system 51 may include a receiving system 16 for receiving characteristic data 30, a
8 converter 14 for establishing a data standard and for converting the characteristic data 30 into
9 standardized characteristic data 31, and an extractor 15 for presenting the standardized
10 characteristic data 31. The quality exchange system 51 may be implemented in a computer
11 component exchange system 50, such as that described in Application Serial No. 09/557,040,
12 entitled INTERNET BASED COMPUTER SYSTEM COMPONENT EXCHANGE, filed
13 04/21/2000, the entire contents of which are incorporated herein by reference.

14 The receiving system 16 preferably is coupled with, and capable of data communications
15 with, at least one buyer processor 10 and/or at least one seller processor 11 via, for example, an
16 information network 150. The buyer processors 10 and/or the seller processors 11 each may
17 comprise any form of processor such as a PLD, a DSP, and/or a personal computer. The
18 information network 150 may comprise, for example, a local area network, a wide area network,
19 the Internet, or any other type of information network. The receiving system 16, each of the
20 buyer processors 10, and/or each of the seller processors 11 may communicate with the
21 information network 150 via any media form such as telephone, Ethernet, wireless, fiberoptic,
22 T1, ISDN, xDSL, and/or any Internet Protocol (IP) capable media. The receiving system 16, the
23 buyer processors 10, and/or the seller processors 11 each preferably communicate in real-time
24 with the information network 150 in an XML environment. The communications among the
25 receiving system 16, each of the buyer processors 10, and/or each of the seller processors 11 may
26 comprise non-encrypted and/or encrypted communications.

1 Each of the seller processors 11 and/or buyer processors 10 may be adaptable for
2 communicating characteristic data 30 regarding a plurality of components 100 to the receiving
3 system 16. The characteristic data 30 comprises any information, including quality information,
4 that relates to decreasing the return rate for the plurality of components 100 and/or to increasing
5 the quality and/or reliability of the plurality of components 100. For example, regarding each
6 component manufactured by one of the seller processors 11, the seller processor 11 may
7 communicate any known reliability information, such as mean time between failures, to the
8 component exchange system 50. Similarly, one of the buyer processors 10 may report a
9 component failure to the component exchange system 50 after the component, manufactured by
10 one of the seller processors 11, failed while being used in combination with certain other
11 components. The buyer processors 10 and/or the seller processors 11 each may include one or
12 more input devices and/or systems, such as a keyboard, a disk drive, and/or a scanner, for
13 entering the characteristic data 30 into the buyer processors 10 and/or the seller processors 11.

14 The converter 14 is coupled with, and capable of data communications with, the
15 receiving system 16, and receives the characteristic data 30 from the receiving system 16. To
16 facilitate a meaningful analysis of the characteristic data 30, the converter 14 preferably also is
17 capable of establishing the data standard, a uniform standard into which the characteristic data 30
18 for each of the plurality of components 100 can be converted. Being generated by one or more
19 of the seller processors 11 and/or one or more of the buyer processors 10, the characteristic data
20 30, as received by the receiving system 16, may be measured and reported based upon a plurality
21 of different methods and bases. Stated somewhat differently, each seller processor 11 and/or
22 each buyer processor 10 may utilize its own measurement procedures and standards, which differ
23 from the measurement procedures and standards used by other seller processors 11 and/or buyer
24 processors 10.

25 For example, seller processors 11 who manufacture computer hard disks may report a
26 "seek time" for each of their hard disk models. For each hard disk model, the seek time, as

1 reported, may comprise a measured value, such as track-to-track seek time or full-stroke seek
2 time, or a calculated value, such as an average seek time. The calculated value may be based
3 upon any number of measured values, depending on the underlying measurement procedure used
4 by each seller processor 11. As the number of the measured values increases and/or a testing
5 pattern grows more diverse, the calculated value is more likely to accurately reflect the actual
6 performance of the disk drive model. Each underlying measurement procedure therefore may
7 yield a different seek time for the same hard disk model.

8 For each of the plurality of components 100, the converter 14 generates the data standard
9 by examining the characteristic data 30 as reported by the seller processors 11 along with any
10 comments included in the characteristic data 30 from the buyer processors 10. Since each of the
11 seller processors 11 may employ different underlying measurement procedures, the converter 14
12 seeks characteristic data 30 comprising measured, rather than calculated, values from the seller
13 processors 11. The converter 14 also may establish uniform measuring procedures to the seller
14 processors 11 and/or the buyer processors 10 for determining the measured values. From the
15 measured values, the converter 14 evaluates factors, such as sample size and/or data trends,
16 and/or generates uniform standardized characteristic data 31 for each of the plurality of
17 components 100. When generating the data standard, the converter 14 also may consider the
18 characteristic data 30 communicated by the buyer processors 10, which provides a valuable
19 system for receiving consumer feedback regarding the plurality of components 100. If multiple
20 data standards would facilitate meaningful alternate analyses of the characteristic data 30, the
21 converter 14 may be capable of generating a plurality of data standards for each of the plurality
22 of components 100. One of the plurality of data standards may be designated as a default data
23 standard.

24 For example, one of the seller processors 11 who manufactures printed circuit board
25 assemblies may report a ninety-nine percent pass rate on its solder connections. The reported
26 pass rate however may be based upon a sample size of ten assemblies or ten million assemblies.

1 Further, the pass rate, as reported, may reflect a single unacceptable solder joint repeated on each
2 of the tested assemblies or one assembly comprising only unacceptable solder joints for every
3 ninety-nine assemblies that pass continuity testing. The converter 14 may base the standardized
4 characteristic data 31 for the printed circuit board assemblies on a number of assemblies which
5 are reworked per comments from the buyer processors 10; whereas, the quality information from
6 a particular manufacturer may comprise percentage measurements for unacceptable solder joints
7 out of a total number of solder joints attempted. The standard may have been selected, for
8 example, because reworking the unacceptable assemblies may have an adverse effect on
9 subsequent performance. With reference to Fig. 2, the converter 14 may perform a linear
f0 regression, regressing the percentage of unacceptable solder joints provided by the manufacturer
f1 against the percentage of reworks typically found given such percentage of unacceptable solder
f2 joints. An exemplary graph of such a linear regression is shown in Fig. 2.

f3 Returning to Fig. 1, the converter 14 may receive characteristic data 30 from the seller
f4 processors 11 and/or the buyer processors 10 via the receiving system 16 after the data standard
f5 has been established. The converter 14 also is capable of converting the characteristic data 30
f6 into standardized characteristic data 31 in accordance with the data standard, preferably the
f7 default data standard. Upon receiving the characteristic data 30, the converter 14 verifies that the
f8 characteristic data 30 substantially complies with a set of data format requirements, also
f9 established by the converter 14. Examples of such data format requirements include, without
f10 limitation: data field length, transmission header format, or other non-substantive criteria for
f11 accepting characteristic data 30. If the characteristic data 30 does not substantially comply with
f12 the set of data format requirements, the converter 14 may be capable of rejecting the
f13 characteristic data 30, notifying the receiving system 16 of the substantial non-compliance,
f14 and/or accepting the characteristic data 30 despite the substantial non-compliance. Upon
f15 receiving notification of the substantial non-compliance, the receiving system 16 may be adapted
f16 to prompt the seller processor 11 and/or the buyer processor 10 for acceptable characteristic data

1 30 and/or may be capable of converting the non-compliant characteristic data 30 into
2 characteristic data 30 that sufficiently complies with the data standard. To encourage each of the
3 seller processors 11 to report characteristic data 30 that substantially complies with the set of
4 data format requirements, the participation of each seller processor 11 in the quality exchange
5 system 51 may be conditioned upon providing a substantially compliant characteristic data
6 format. As the characteristic data 30 is received, the converter 14 may be capable of modifying
7 the data standard in accordance with the additional characteristic data 30.

8 The converter 14 preferably includes a database system 57 for retaining the standardized
9 characteristic data 31 and/or the data standard. The database system 57 may include any form of
10 searchable database and preferably comprises a memory system. The memory system of the
11 converter 14 may include any form of electronic and/or magnetic storage medium, such as, for
12 example, SRAM, DRAM, EEPROM, FLASH, a hard drive, a compact disk, or any other form of
13 storage medium. The memory system preferably comprises non-volatile memory. Preferably,
14 the standardized characteristic data 31 stored within the database system 57 substantially
15 complies with the default data standard.

16 The receiving system 16 further may be adapted for receiving characteristic data
17 requirements 56 from one or more of the buyer processors 10 and/or one or more of the seller
18 processors 11 and for communicating characteristic data requirements 56 to the converter 14 via
19 the receiving system 16. The characteristic data requirements 56 each preferably comprise a
20 request for the characteristic data 30, such as component quality information, regarding one or
21 more of the plurality of components 100 that are supported by the information exchange system
22 51. The characteristic data requirements 56 are generated by the buyer processors 10 and/or the
23 seller processors 11 and may be communicated to the buyer processors 10 and/or the seller
24 processors 11 by one or more of the input devices and/or systems. Upon receipt, the converter
25 14 may be capable of searching the database system 57 for standardized characteristic data 31
26 relevant to each of the components included in the characteristic data requirements 56. If

1 relevant standardized characteristic data 31 is available, the converter 14 retrieves the relevant
2 standardized characteristic data 31 from the database system 57.

3 Since more than one data standard may be associated with the components included in
4 the characteristic data requirements 56, the characteristic data requirements 56 also may include
5 a preselected data standard, whereby the seller processor 11 and/or the buyer processor 10 may
6 select the data standard. The default data standard preferably is applied when the characteristic
7 data requirements 56 do not include the preselected data standard. For example, if the
8 characteristic data 30 is based upon distance, the data standard may provide conversions of the
9 distance into feet, inches, microns, meters, centimeters, millimeters, and/or any other relevant
10 units, with the centimeters conversion serving as the default data standard. If necessary, the
11 converter 14 preferably is capable of converting the relevant standardized characteristic data 31
12 as stored in the database system 57 into relevant standardized characteristic data 31 that is
13 substantially in compliance with the preselected data standard. The converter 14 then
14 communicates the relevant standardized characteristic data 31 to the extractor 15.

15 The extractor 15 is coupled with, and capable of data communications with, the receiving
16 system 16 and/or the converter 14. Upon receipt of the relevant standardized characteristic data
17 31, the extractor 15 presents the relevant standardized characteristic data 31 to the requesting
18 seller processors 11 and/or buyer processors 10. The requesting seller processors 11 and/or
19 buyer processors 10 each may include one or more output devices and/or systems, such as a
20 display or a printer, for presenting the characteristic data 30. The extractor 15 preferably is
21 coupled with, and capable of data communications with, at least one of the buyer processors 10
22 and/or at least one of the seller processors 11 via, for example, the information network 150.
23 The extractor 15, each of the buyer processors 10, and/or each of the seller processors 11 may
24 communicate with the information network 150 via any media form such as telephone, Ethernet,
25 wireless, fiberoptic, T1, ISDN, xDSL, and/or any Internet Protocol (IP) capable media. The
26 extractor 15, the buyer processors 10, and/or the seller processors 11 each may communicate in

1 real-time with the information network 150 in an XML environment. The communications
2 among the extractor 15, each of the buyer processors 10, and/or each of the seller processors 11
3 may comprise non-encrypted and/or encrypted communications. The extractor 15 also may be
4 adapted to present all of the standardized characteristic data associated with at least one
5 preselected component among the plurality of components and/or all of the standardized
6 characteristic data associated with a preselected seller processor.

7 Turning to Figs. 3A-C, one or more seller processors 11 [STEP 210] and/or one or more
8 buyer processors 10 [STEP 220] each, in operation, may communicate characteristic data 30,
9 including quality information, regarding a plurality of components 100 to a receiving system 16
10 of an information exchange system 51. Each of the seller processors 11 and/or each of the buyer
11 processors 10 may communicate with the receiving system 16 via, for example, an information
12 network 150 through non-encrypted and/or encrypted communications. Upon receiving the
13 characteristic data 30 [STEP 230], the receiving system 16 preferably communicates the
14 characteristic data 30 to a converter 14 of the information exchange system 51 [STEP 240].

15 By examining the characteristic data 30 as provided by the seller processors 11 and/or the
16 buyer processors 10 via the receiving system 16, the converter 14 establishes a data standard for
17 the plurality of components 100 [STEP 250]. The data standard preferably comprises a uniform
18 standard into which the characteristic data 30 for each of the plurality of components 100 can be
19 converted. To establish the data standard, the converter 14 preferably evaluates factors, such as
20 sample size and/or data trends. If multiple data standards would facilitate meaningful alternate
21 analyses of the characteristic data, the converter 14 may generate a plurality of data standards for
22 each of the plurality of components 100 and designate one of the plurality of data standards to be
23 a default data standard. As part of the data standard, the converter 14 also may establish uniform
24 measuring procedures and/or a set of data format requirements for the seller processors 11 and/or
25 the buyer processors 10. The uniform measuring procedures may be used to create subsequent
26 characteristic data 30; whereas, the set of data format requirements provide one or more non-

1 substantive criteria for accepting characteristic data 30. Once the data standard has been
2 established, the converter 14 may convert the characteristic data 30 into standardized
3 characteristic data 31 substantially in accordance with the data standard, preferably the default
4 data standard [STEP 260]. The converter 14 then stores the standardized characteristic data 31 in
5 a database system 57 [STEP 270].

6 The converter 14, once the data standard has been established, may subsequently receive
7 characteristic data 30 from the seller processors 11 and/or the buyer processors 10 via the
8 receiving system 16 [STEP 240]. Upon receiving the subsequent characteristic data 30, the
9 converter 14 first verifies that the subsequent characteristic data 30 substantially complies with
10 the set of data format requirements [STEP 280]. If the subsequent characteristic data 30 does not
11 substantially comply with the data format requirements, the converter 14 may reject the
12 subsequent characteristic data 30 [STEP 290] and notify the receiving system 16 of the
13 substantial non-compliance [STEP 295], and/or the converter 14 accept the subsequent
14 characteristic data 30 despite the substantial non-compliance [STEP 300]. Upon receiving
15 notification of the substantial non-compliance, the receiving system 16 also may prompt the
16 seller processor 11 [STEP 310] and/or the buyer processor 10 [STEP 311] to provide acceptable
17 characteristic data 30. The seller processor 11 [STEP 315] and/or the buyer processor 10 [STEP
18 316] may elect to communicate additional characteristic data 30 to the receiving system 16 in
19 response to the prompt. Once found to be acceptable by the converter 14, the subsequent
20 characteristic data 30 is converted into standardized characteristic data 31 in accordance with the
21 data standard [STEP 320], preferably the default data standard, and stored in the database system
22 57 for later access and/or retrieval [STEP 330]. As the subsequent characteristic data 30 is
23 received, the converter 14 may modify and/or update the data standard in accordance with the
24 subsequent characteristic data 30 [STEP 340].

25 As shown in Figs. 4A-B, the seller processors 11 [STEP 400] and/or the buyer processors
26 10 [STEP 410] further may generate characteristic data requirements 56. The characteristic data

1 requirements 56 each preferably comprise a request for the characteristic data 30, such as
2 component quality information, regarding one or more of the plurality of components 100
3 supported by the information exchange system 51. The seller processors 11 [STEP 420] and/or
4 the buyer processors 10 [STEP 430] preferably communicate the characteristic data requirements
5 56 to the receiving system 16, which may, in turn, communicate the characteristic data
6 requirements 56 to the converter 14 [STEP 440]. Upon receipt of the characteristic data
7 requirements 56, the converter 14 may search the database system 57 for standardized
8 characteristic data 31 that is relevant to each of the components included in the characteristic
9 data requirements 56 [STEP 450]. If relevant standardized characteristic data 31 is available, the
10 converter 14 retrieves the relevant standardized characteristic data 31 from the database system
11 57 [STEP 460].

12 Since more than one data standard may be associated with the components included in
13 the characteristic data requirements 56, the seller processors 11 and/or the buyer processors 10
14 may include a preselected data standard in the characteristic data requirements 56. By including
15 the preselected data standard in the characteristic data requirements 56, the seller processor 11
16 and/or the buyer processor 10 may designate and/or select an appropriate and/or desired data
17 standard. If the characteristic data requirements 56 do not include the preselected data standard,
18 the converter 14 applies the default data standard. The converter 14 then, if necessary, converts
19 the relevant standardized characteristic data 31 as provided by the database system 57 into
20 relevant standardized characteristic data 31 that is substantially in compliance with the
21 preselected data standard [STEP 470].

22 After the conversion, the converter 14 communicates the relevant standardized
23 characteristic data 31 to an extractor 15 of the information exchange system 51 [STEP 480].
24 Upon receiving the relevant standardized characteristic data 31, the extractor 15 presents the
25 relevant standardized characteristic data 31 to the requesting seller processors 11 [STEP 490]
26 and/or buyer processors 10 via, for example, the information network 150 [STEP 500]. Upon

1 request by the seller processor 11 and/or buyer processor 10, the extractor 15 also may present
2 all of the standardized characteristic data 31 associated with at least one preselected component
3 [STEP 510] and/or all of the standardized characteristic data associated with a preselected seller
4 processor [STEP 520].

5 While the invention is susceptible to various modifications and alternative forms, specific
6 examples thereof have been shown by way of example in the drawings and are herein described
7 in detail. It should be understood, however, that the invention is not to be limited to the
8 particular forms or methods disclosed, but to the contrary, the invention is to cover all
9 modifications, equivalents, and alternatives falling within the spirit and scope of the appended
10 claims.

1 CLAIMS

2

3 What is claimed is:

4

1 1. A system for information exchange in a component exchange system, the
2 component exchange system being capable of data communications with at least one seller
3 processor and at least one buyer processor, the at least one seller processor being adaptable for
4 communicating characteristic data regarding a plurality of components to the component
5 exchange system, and the at least one buyer processor being adaptable for receiving the
6 characteristic data from the component exchange system, comprising:

7 a receiving system for receiving the characteristic data from at least one of the at least
8 one seller processor;

9 a converter for establishing a data standard for the characteristic data and converting the
10 characteristic data into standardized characteristic data in accordance with the data standard; and

11 an extractor for presenting the standardized characteristic data to at least one of the at
12 least one buyer processor.

1 2. The system of claim 1, wherein the receiving system is capable of receiving the
2 characteristic data from at least one of the at least one buyer processor.

1 3. The system of claim 1, wherein the converter is capable of establishing a set of
2 data format requirements and is capable of verifying that the characteristic data sufficiently
3 complies with the set of data format requirements.

1 4. The system of claim 3, wherein the receiving system is capable of converting each
2 of the characteristic data that does not sufficiently comply with the data standard.

1 5. The system of claim 1, wherein the data standard comprises a measurement
2 standard for the characteristic data.

1 6. The system of claim 1, wherein the data standard is selectable.

1 7. The system of claim 1, wherein the extractor is capable of presenting the
2 standardized characteristic data to at least one of the at least one seller processor.

1 8. The system of claim 1, wherein the extractor is capable of presenting all of the
2 standardized characteristic data associated with at least one preselected component.

1 9. The system of claim 1, wherein the extractor is capable of presenting all of the
2 standardized characteristic data associated with a preselected seller processor.

1 10. A system for information exchange in a component exchange system, the
2 component exchange system being capable of data communications with at least one seller
3 processor and at least one buyer processor, the at least one seller processor being adaptable for
4 communicating characteristic data regarding a plurality of components to the component
5 exchange system, and the at least one buyer processor being adaptable for receiving the
6 characteristic data from the component exchange system, comprising:

7 a receiving system for receiving the characteristic data from at least one of the at least
8 one buyer processor;

9 a converter for establishing the data standard and for converting the characteristic data
10 into standardized characteristic data in accordance with the data standard, the converter being
11 capable of verifying that the characteristic data sufficiently complies with a set of data format
12 requirements, said data standard comprising a measurement standard for presenting the
13 characteristic data and being selectable; and

14 an extractor for presenting the standardized characteristic data to at least one of the at
15 least one buyer processor.

1 11. A method for exchanging information in a component exchange system, the
2 component exchange system being capable of data communications with at least one seller
3 processor and at least one buyer processor, the at least one seller processor being adaptable for
4 communicating characteristic data regarding a plurality of components to the component
5 exchange system, and the at least one buyer processor being adaptable for receiving the
6 characteristic data from the component exchange system, comprising the steps of:

7 establishing a data standard for the characteristic data;

8 receiving the characteristic data from at least one of the at least one seller processor;

9 converting the characteristic data into standardized characteristic data in accordance with
10 the data standard; and

11 presenting the standardized characteristic data to at least one of the at least one buyer
12 processor.

13 12. The method of claim 11, further comprising the step of verifying that the
14 characteristic data sufficiently complies with a set of data format requirements.

15 13. The method of claim 11, further comprising the step of converting each of the
16 characteristic data that does not sufficiently comply with the data standard into the standardized
17 characteristic data.

18 14. The method of claim 11, further comprising the step of providing a measurement
19 standard for generating the characteristic data.

20 15. The method of claim 11, further comprising the step of selecting a data standard.

1 16. The method of claim 11, further comprising the step of presenting all of the
2 standardized characteristic data associated with at least one preselected component .

1 17. The method of claim 11, further comprising the step of presenting all of the
2 standardized characteristic data associated with a preselected seller processor.

1 18. A method for exchanging information in a component exchange system, the
2 component exchange system being capable of data communications with at least one seller
3 processor and at least one buyer processor, the at least one seller processor being adaptable for
4 communicating characteristic data regarding a plurality of components to the component
5 exchange system, and the at least one buyer processor being adaptable for receiving the
6 characteristic data from the component exchange system, comprising the steps of:

7 establishing a data standard for the characteristic data;

8 receiving the characteristic data from at least one of the at least one buyer processor and
9 at least one of the at least one seller processor;

10 verifying that the characteristic data sufficiently complies with the data standard;

11 converting the characteristic data into standardized characteristic data in accordance with
12 the data standard, said data standard comprising a measurement standard for presenting the
13 characteristic data and being selectable; and

14 presenting the standardized characteristic data to at least one of the at least one buyer
15 processor and at least one of the at least one seller processor.

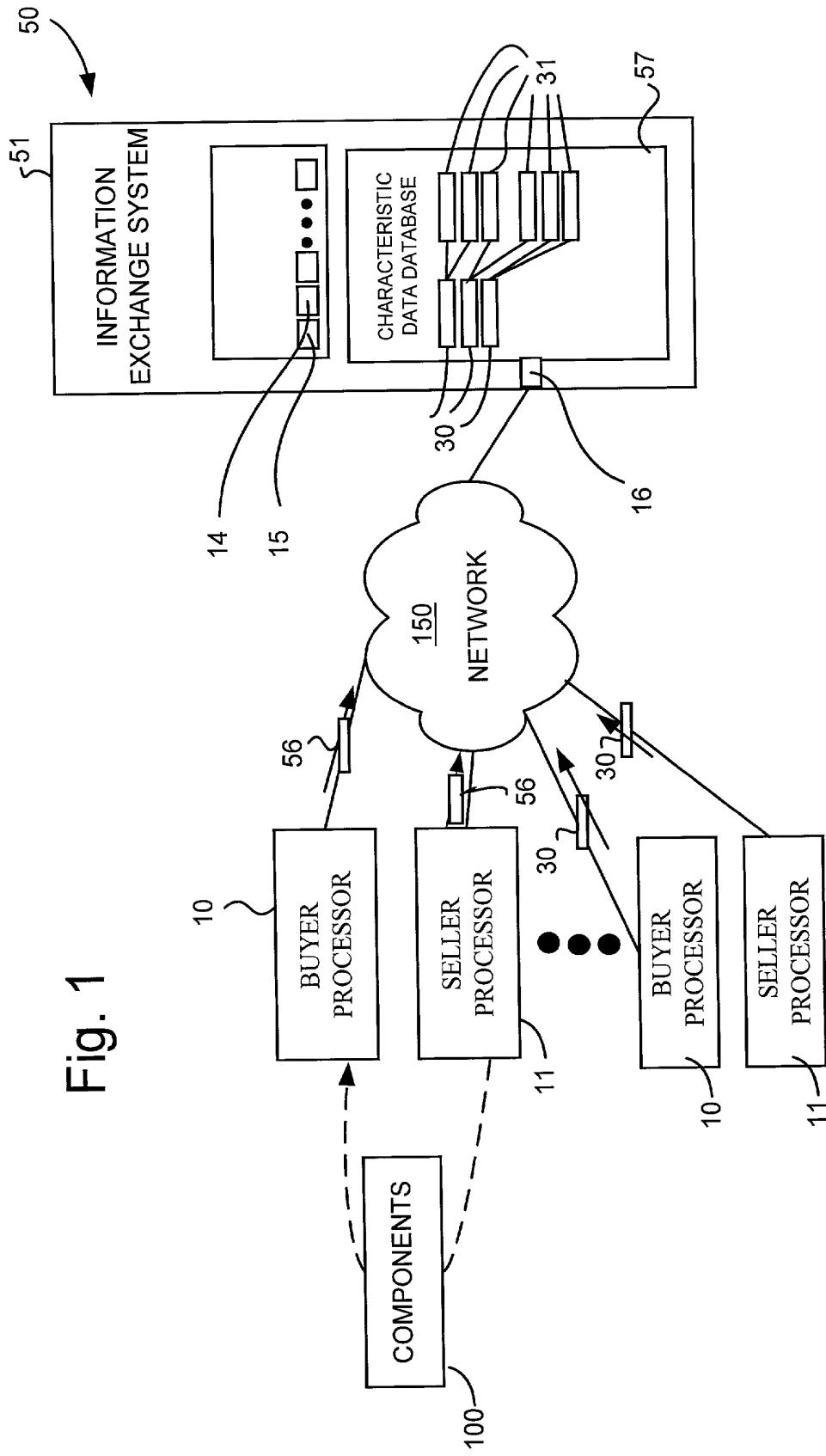
1 **SYSTEM AND METHOD FOR STANDARDIZING COMPONENT CHARACTERISTIC**
2 **DATA SUBMITTED BY A SELLER FOR USE BY A BUYER**

3

4 **ABSTRACT**

5 A quality information system for receiving and/or presenting quality information in a
6 component exchange system and methods of manufacturing and using the same. The quality
7 information system comprises a receiving system, a converter, and an extractor. The receiving
8 system is capable of receiving characteristic data from at least one seller processor and/or at least
9 one buyer processor and is capable of communicating the characteristic data to the converter.
10 Upon receiving the characteristic data, the converter converts the characteristic data into
11 standardized characteristic data in accordance with a data standard established by the converter.
12 The converter then communicates the standardized characteristic data to the extractor, which can
13 present the standardized characteristic data to each of the seller processors and/or each of the
14 buyer processors.

Fig. 1



Percentage of Reworked Printed Circuit Board Assemblies

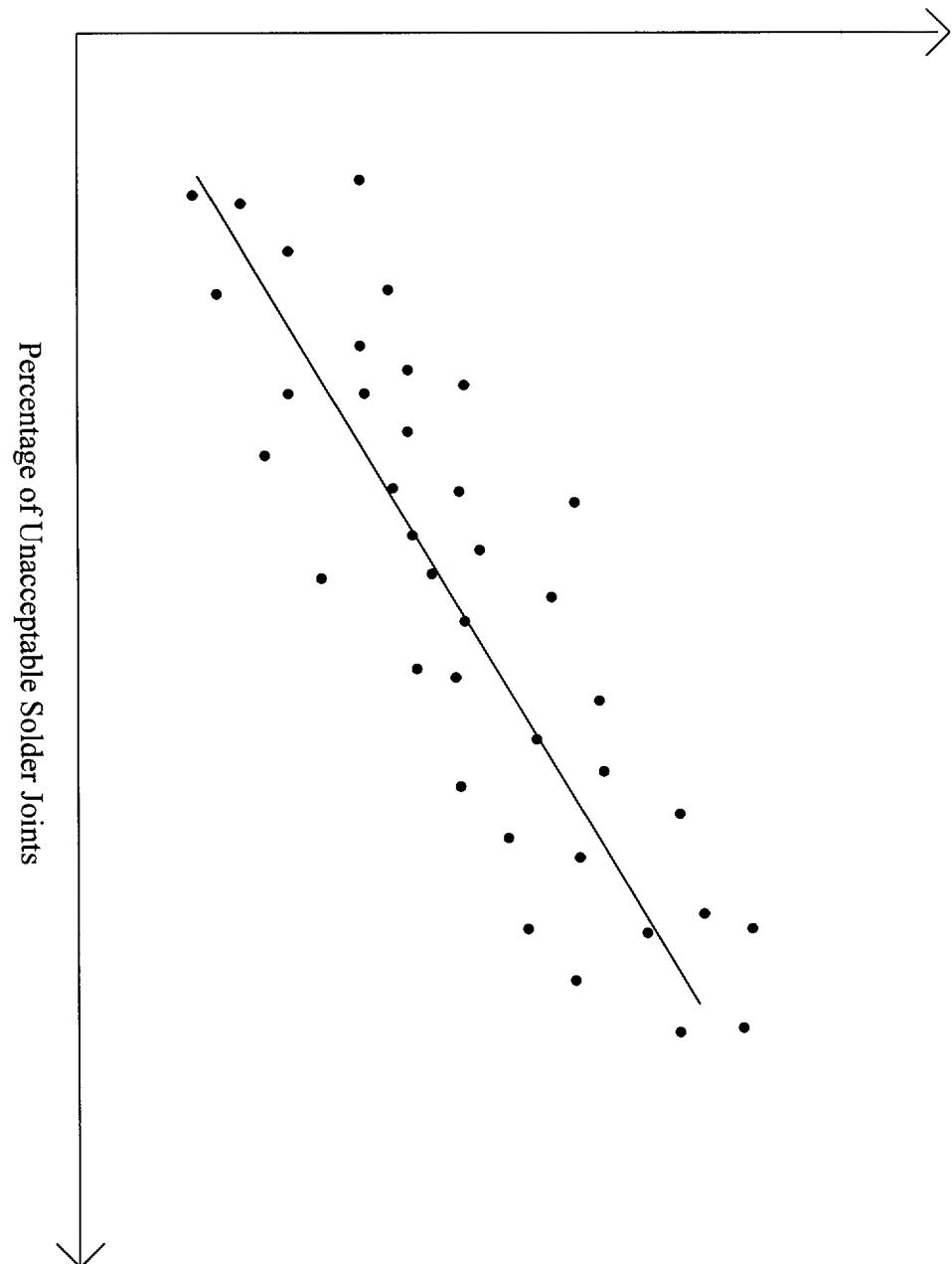


Fig. 2

Fig. 3A

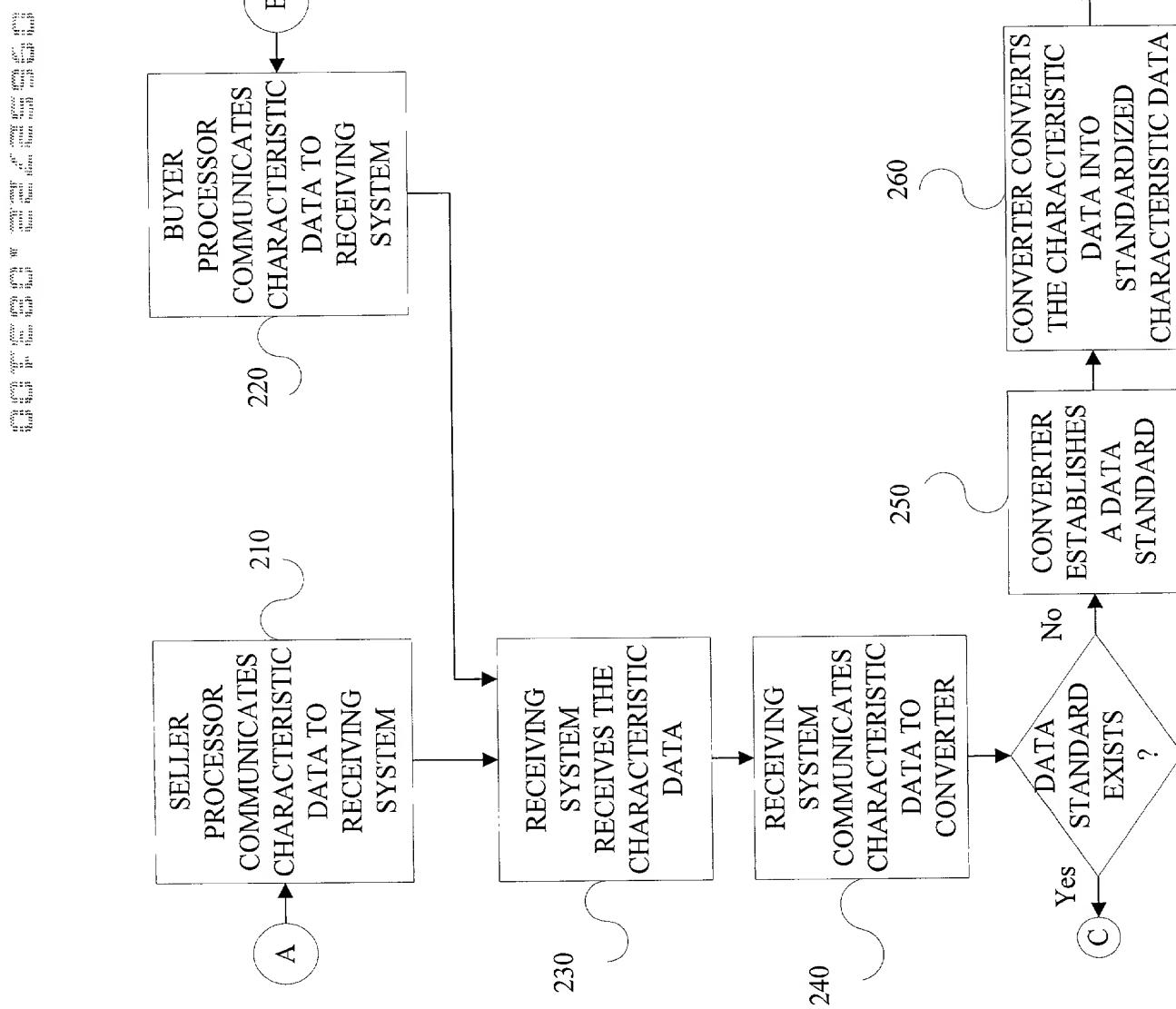
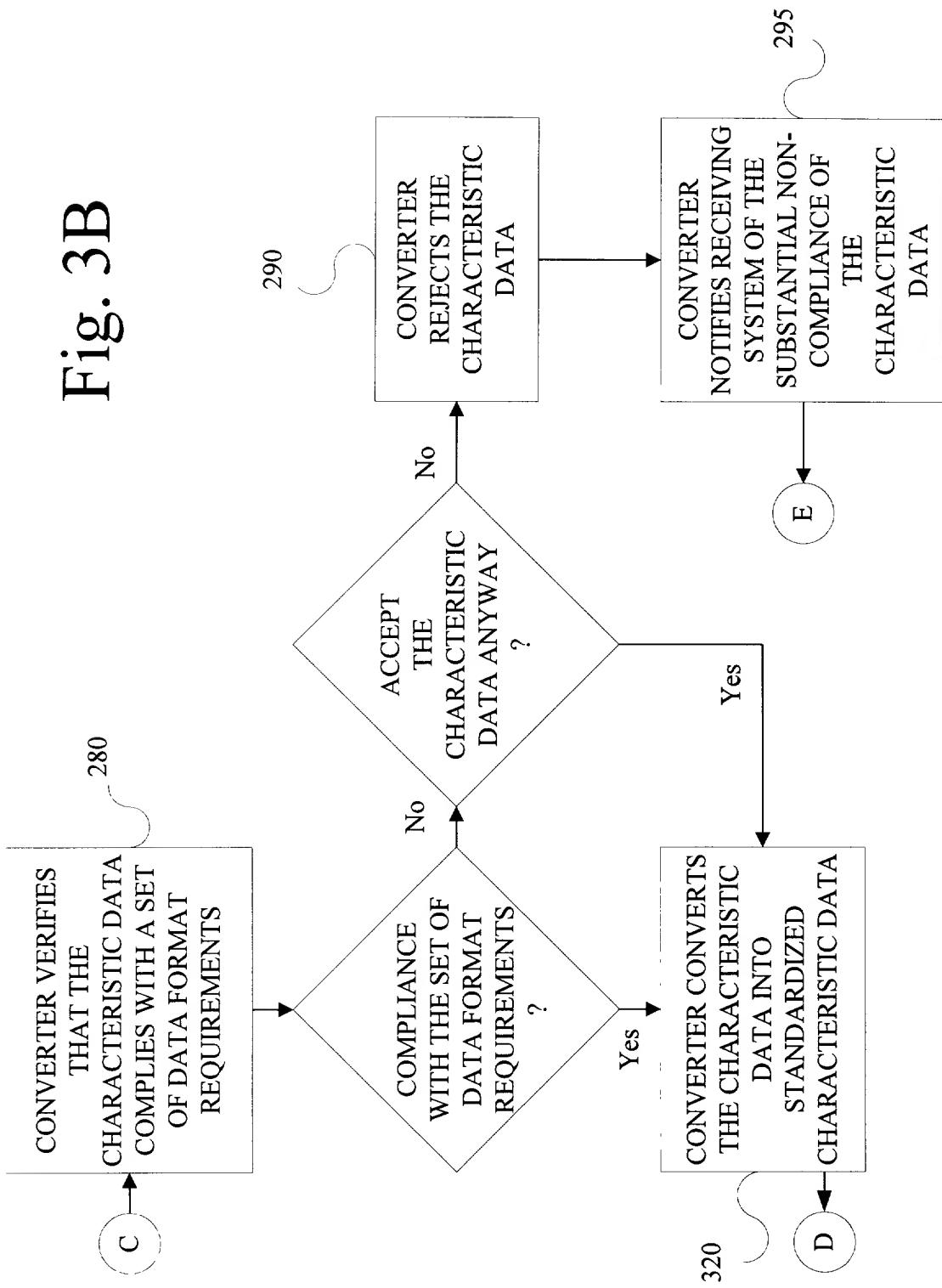


Fig. 3B



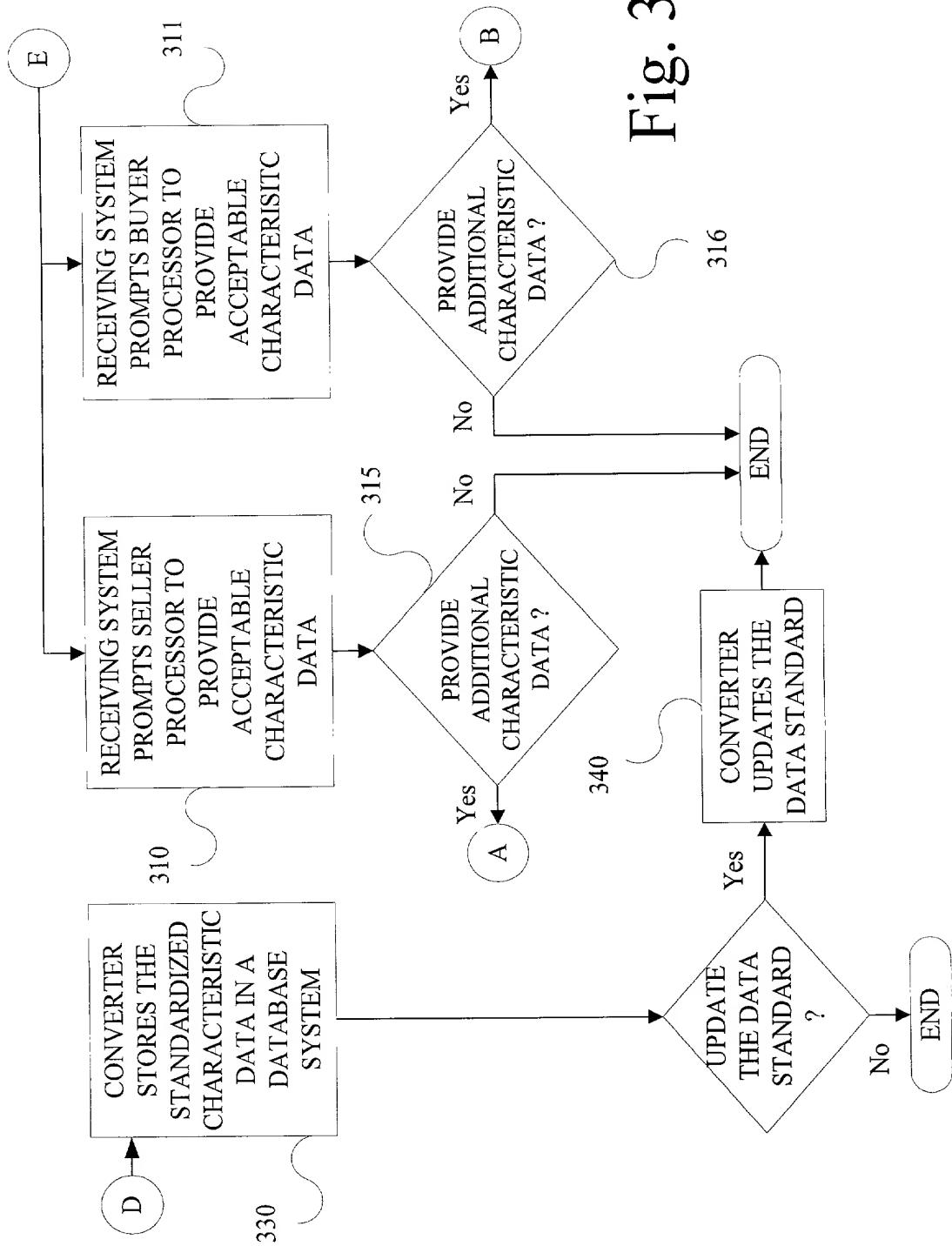


Fig. 3C

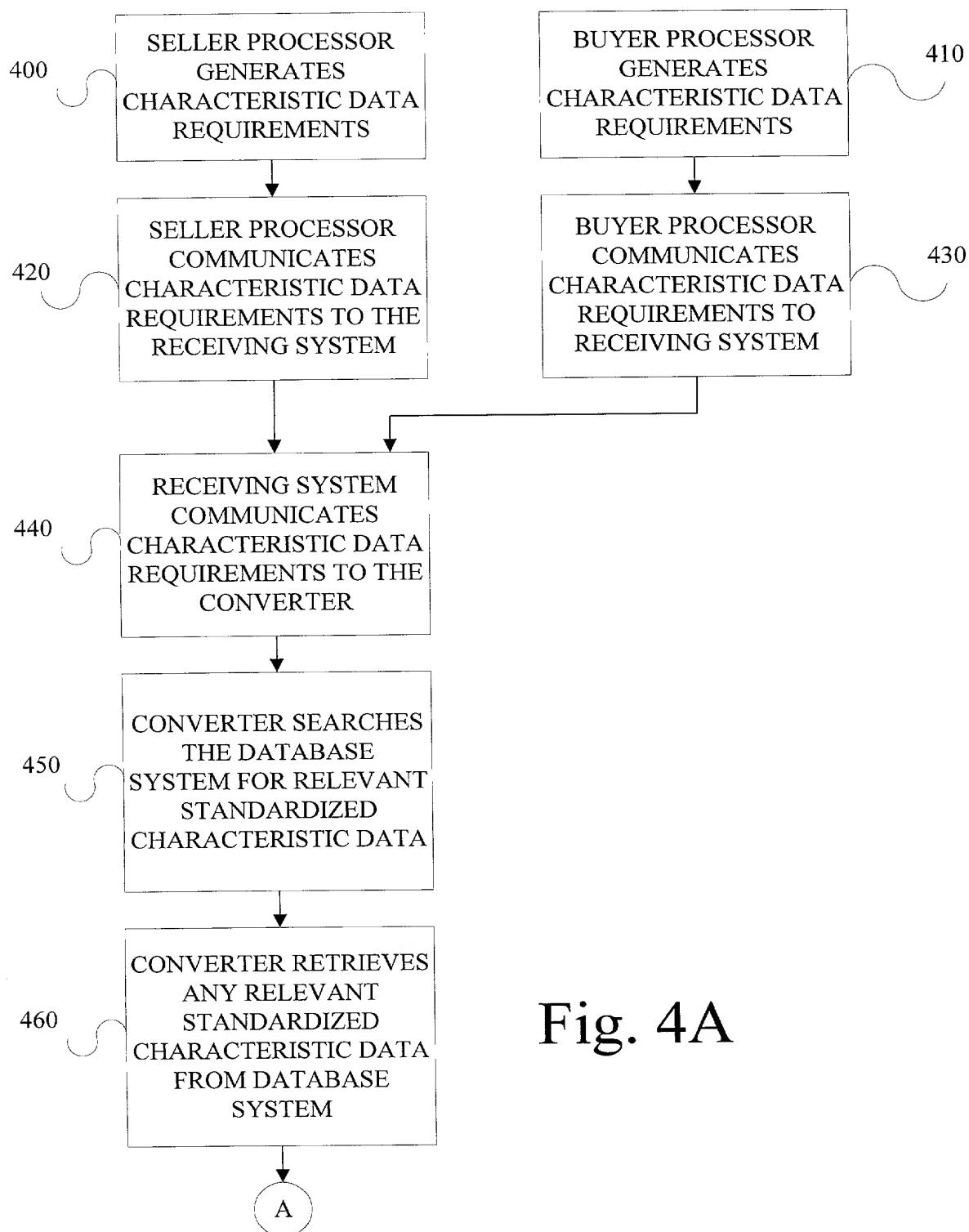


Fig. 4A

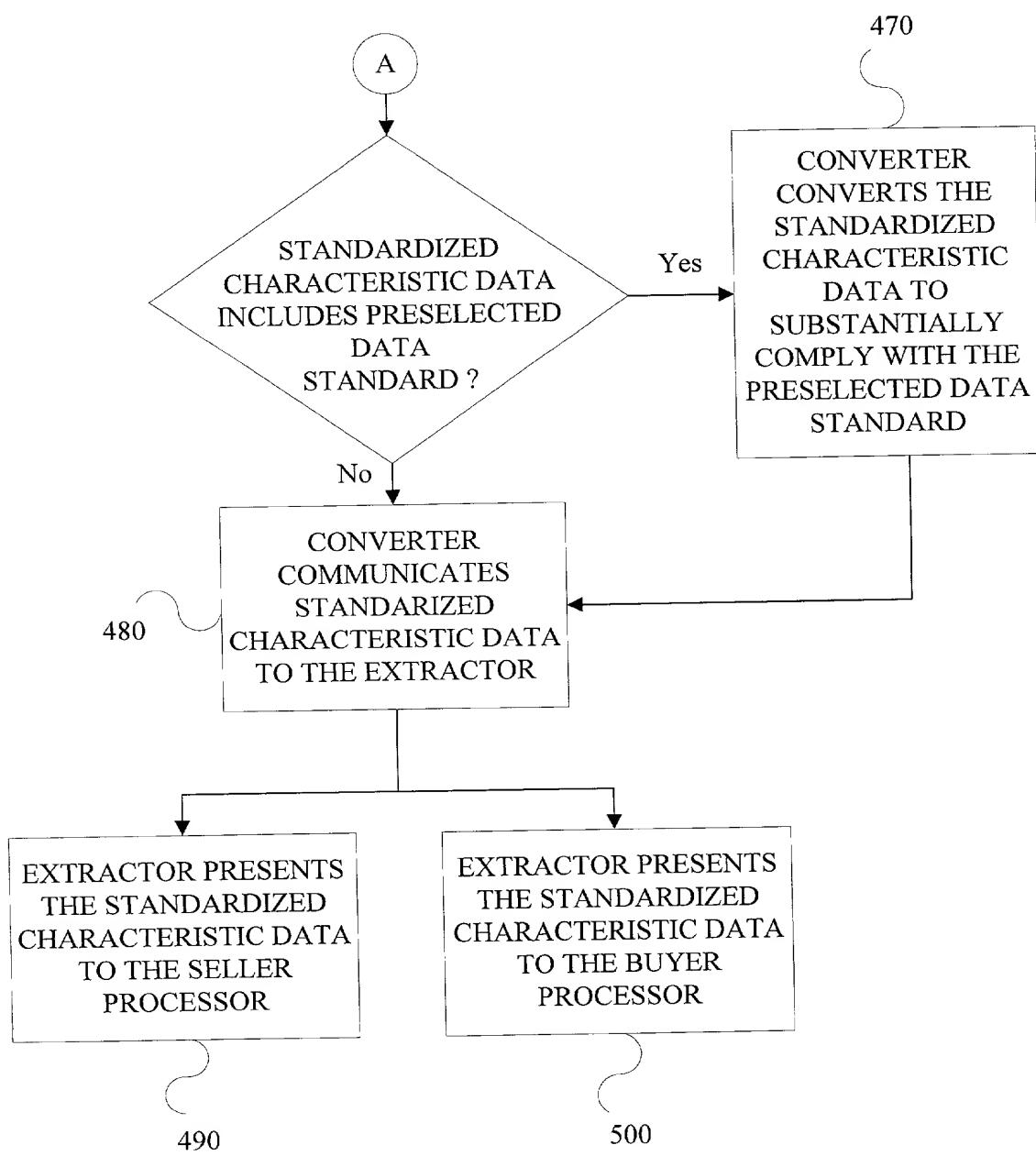


Fig. 4B